Muscle Contraction

Control of Body Movements

Muscle groups occur in pairs which work both against and with each other. These opposing groups are located on the opposite side of a joint and perform opposite actions on it.

Agonist: (protagonist) responsible for the primary joint motion
Antagonist: acts against the agonist to return the joint to extended position
As one group is in full contraction, the other group is in full extension
Example: Bicep Curl
Biceps (agonist) vs Triceps (antagonist)
Agonist and Antagonist groups work together for fine motor control and balance of movement

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Assisting Muscle Groups

Synergist: allows primary movement of the joint by helping the agonist
Brachioradialis
Fixator: fixates the origin from moving
Latissimus Dorsi
Reciprocal Innervation

The innervation process which produces exactly the amount of relaxation in the antagonist to balance the amount of contraction generated in the agonist is known as reciprocal innervation. Failure of the central nervous system (CNS) to coordinate the nerve actions of the agonist and antagonist will result in jerky, imprecise movements lacking the smoothness we take for granted.

Parkinson. Disease

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3 Types of Muscle Contraction (Activation)

Concentric Contraction: muscle length *decreases* against resistance(ie. weight or force ie. gravity)

Eccentric Contraction: muscle length increases against resistance (ie. against weight or force of opposing muscle group)
Controlled lowering
Isometric Contraction: muscle length *does not change* during contraction against a force or weight

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Muscle Direction: Shortening and Lengthening

Muscle Contraction can only take place in the direction of the muscle fibres:
ie. Abdominals
Rectus Abdominis
Transverse Abdominis
Internal Obliques
External Obliques

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